Mathematics in Context with mappings from GCSE Mathematics, GCSE Statistics, GCE Mathematics and GCE Further Mathematics.
Mappings to Pearson textbooks are in red text, with the relevant textbook stated either at the top of the column or within the specific cell.

Please note this document is for guidance only and just highlights areas of some overlap in content between the different specifications. The areas covered by the different specifications will not wholly reflect those covered for 7MC0 Mathematics in Context. The 7MC0 Mathematics in Context specification document should be used to ensure knowledge of what is covered specifically in the Mathematics in Context course.

Summary of changes since the previous version (version 1)

Section/ reference	Description of change
Introduction	Addition of yellow highlighted text
A1	• Removal of textbook reference for 'Non-random sampling' from Edexcel GCSE (9-1) Statistics and Edexcel AS and A Level Mathematics columns • Removal of textbook reference for 'Stratified sampling' from Edexcel GCSE (9-1) Statistics column
A3	Removal of textbook reference for '3.4 Transforming data' from Edexcel GCSE (9-1) Statistics column
A5	Removal of textbook reference for '2.5 Coding' from Edexcel AS and A Level Mathematics column
A8	Removal of textbook reference for '1.3 Hypothesis testing for zero correlation' from Edexcel AS and A Level Mathematics column
A10	Removal of reference for Paper 4B: Further Statistics 2 in the GCE A Level Further Mathematics (9FM0) column
LP8	Removal of textbook reference for '17.8 Proof' from Edexcel GCSE (9-1) Mathematics Higher column
LP10	Removal of textbook reference for '7.2 The simplex method' from Edexcel AS and A Level Further Mathematics column

Each of the specification references noted are copied directly from the relevant specification documents.

For the GCSE (9-1) Mathematics 2015 column, please see definitions of **bold** and <u>underlined</u> text as per the specification:

- All students will develop confidence and competence with the content identified by standard type.
- All students will be assessed on the content identified by the standard and the <u>underlined</u> type; more highly attaining students will develop confidence and competence with all of this content.
- Only the more highly attaining students will be assessed on the content identified by **bold** type. The highest attaining students will develop confidence and competence with the bold content.
- Foundation tier students will be assessed on content identified by the standard and <u>underlined</u> type. Foundation tier students will not be assessed on content identified by **bold** type.
- Higher tier students will be assessed on all the content which is identified by the standard, <u>underlined</u> and **bold** type.

For the GCSE (9-1) Statistics 2017 column, please see definitions of **bold** and <u>underlined</u> text as per the specification:

- All students (both tiers) will develop confidence and competence with the content identified by the standard type.
- All students will be assessed on the content identified by the standard type and the <u>underlined</u> type, and this content will be in both foundation tier and higher tier papers. The more highly-attaining students will develop confidence and competence with all this content.
- Only the more highly-attaining students (Higher tier only) will be assessed on the content identified by **bold** type; the highest-attaining students will develop confidence and competence with this content

Applications of Statistics

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 (1MA0) Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 (1ST0) Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
A1	Infer properties of populations or distributions from a sample, while knowing the limitations of sampling	**S1:** infer properties of populations or distributions from a sample, while knowing the limitations of sampling **Edexcel GCSE (9-1) Mathematics Higher book** 3.1 – Statistical diagrams 1 14.1 – Sampling	**1c.01:** Know the difference between population, sample frame and sample. **1c.02:** Know that 'population' can have different meanings within a stated context. **1c.03:** Know reasons for employing judgement sampling or opportunity (convenience) sampling, and the associated risks of bias when these techniques are used. **1c.04:** (a) Know appropriate sampling techniques in the context of the problem to avoid bias. (b) Understand random, systematic, and quota sampling. **1c.05:** Know the key features of a simple random sample and demonstrate understanding of how different techniques, both physical and electronic, are used to select random members from a population: including, but not limited to, dice, cards, random number lists, and calculator functions. **Edexcel GCSE (9-1) Statistics book** 1.4 – Populations 1.6 – Random sampling	**Paper 3: Statistics & Mechanics** **1.1:** Understand and use the terms 'population' and 'sample.' Use samples to make informal inferences about the population. Select or critique sampling techniques in the context of solving a statistical problem, including understanding that different samples can lead to different conclusions about the population. **Statistics and Mechanics Year 1/AS book** 1.1 – Populations and samples 1.2 – Sampling 1.4 – Types of data	N/A
A2	Interpret and construct tables and line graphs for time series data; calculate, interpret and use moving averages	**S2:** interpret and construct tables, charts and diagrams, including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data, tables and line graphs for time series data and know their appropriate use **Edexcel GCSE (9-1) Mathematics Higher book** 3.2 – Time series 3.6 – Statistical diagrams 2 3 – Extend (Q16, Q17)	**2f.01:** Identify trends in data through inspection and by calculation of 4 point **or other determined appropriate** moving averages. **2f.02:** Interpret seasonal and cyclic trends in context. **Use such trends to make predictions.** **Edexcel GCSE (9-1) Statistics book** 5.1 – Line graphs and time series 5.2 – Trend lines 5.3 – Variations in a time series 5.4 – Moving averages 5.5 – Estimating seasonal variations and making predictions	N/A	N/A
A3	Construct and interpret diagrams for grouped discrete data and	**S3: construct and interpret diagrams for grouped discrete**	**2a.03:** Represent data sets graphically using calculated key	**Paper 3: Statistics & Mechanics** **2.1:** Interpret diagrams for single-	N/A

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 (1MA0) Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 (1ST0) Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
	continuous data, i.e. histograms with equal and unequal class intervals and cumulative frequency graphs, and use them appropriately	**data and continuous data, i.e. histograms with equal and unequal class intervals and cumulative frequency graphs, and know their appropriate use** **Edexcel GCSE (9-1) Mathematics Higher book** 3.1 – Statistical diagrams 1 3.6 – Statistical diagrams 2 14.2 – Cumulative frequency 14.4 – Drawing histograms 14.5 – Interpreting histograms 14.6 – Comparing and describing populations	values as necessary, and interpret and compare data sets displayed graphically: bar charts, line graphs, time series, scatter diagrams, bar line (vertical line) charts, frequency polygons, cumulative frequency (discrete and grouped) charts, histograms (equal class width), and box plots. **2a.04: Calculate and use frequency density to draw histograms (unequal class width), and interpret and compare data sets displayed in histograms (unequal class width).** **Edexcel GCSE (9-1) Statistics book** 2.10 – Histograms and frequency polygons 2.11 – Cumulative frequency charts 2.13 – Histograms with unequal class widths 3.3 – Averages from grouped data 3.6 – Measures of dispersion for discrete data 3.7 – Measures of dispersion for grouped data	variable data, including understanding that area in a histogram represents frequency. **Statistics and Mechanics Year 1/AS book** 3.3 – Cumulative frequency 3.4 – Histograms	
A4	Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate graphical representation, including box plots	**S4:** interpret, analyse and compare the distributions of data sets from univariate empirical distributions through: • appropriate graphical representation involving discrete, continuous and grouped data, **including box plots** **Edexcel GCSE (9-1) Mathematics Higher book** 3.1 – Statistical diagrams 1 14.2 – Cumulative frequency 14.3 – Box plots 14.4 – Drawing histograms 14.5 – Interpreting histograms 14.6 – Comparing and describing populations	**2a.03:** Represent data sets graphically using calculated key values as necessary, and interpret and compare data sets displayed graphically: bar charts, line graphs, time series, scatter diagrams, bar line (vertical line) charts, frequency polygons, cumulative frequency (discrete and grouped) charts, histograms (equal class width), and box plots. **Edexcel GCSE (9-1) Statistics book** 3.3 – Averages from grouped data 3.4 – Transforming data 3.6 – Measures of dispersion for discrete data 3.7 – Measures of dispersion for grouped data 3.9 – Box plots and outliers	**Paper 3: Statistics & Mechanics** **2.1:** Interpret diagrams for single-variable data, including understanding that area in a histogram represents frequency. **Statistics and Mechanics Year 1/AS book** 3.2 – Box plots 3.5 – Comparing data	N/A
A5	Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate measures of	**S4:** interpret, analyse and compare the distributions of data sets from univariate empirical distributions through:	**2b.01:** Calculate averages for discrete and grouped data: mode, median, arithmetic mean, **weighted mean, geometric**	**Paper 3: Statistics & Mechanics** **2.3:** Interpret measures of central tendency and variation, extending to standard deviation.	N/A

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 (1MA0) Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 (1ST0) Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
	central tendency, including quartiles, inter-quartile range, calculate and use variance and standard deviation	• appropriate measures of central tendency (median, mean, mode and modal class) and spread (range, including consideration of outliers, **quartiles and inter-quartile range**) **Edexcel GCSE (9-1) Mathematics Higher book** 3.5 – Averages and range 14.2 – Cumulative frequency 14.3 – Box plots	**mean, mean seasonal variation.** The term 'mean' should be understood to be 'arithmetic mean' **unless 'geometric mean' is stated.** **2b.03:** Compare different data sets using appropriate calculated or given measure of central tendency: mode, modal class, median and mean. **2c.01:** Calculate different measures of spread: range, quartiles, interquartile range (IQR), percentiles, **interpercentile range, interdecile range and standard deviation.** **2c.04:** Compare different data sets using appropriate calculated or given measure of spread: range, interquartile range (IQR), percentiles **and standard deviation**. **2c.05:** Use calculated or given median and interquartile range (IQR) **or interpercentile range or interdecile range or mean and standard deviation** to compare data samples and to compare sample data with population data. **2c.06: Use calculated or given means and standard deviation to standardise and interpret data collected in two comparable samples. Formulae for standard deviation will be given in the formulae sheet.** **Edexcel GCSE (9-1) Statistics book** 3.1 – Averages 3.2 – Averages from frequency tables 3.3 – Averages from grouped data 3.8 – Standard deviation 3.9 – Box plots and outliers 3.11 – Deciding which averages to use 3.12 – Comparing data sets	**Statistics and Mechanics Year 1/AS book** 2.1 – Measures of central tendency 2.2 – Other measures of location 2.3 – Measures of spread 2.4 – Variance and standard deviation	
A6	Recognise correlation and know that it does not indicate causation	**S6:** use and interpret scatter graphs of bivariate data; recognise	**2e.01:** Know and apply vocabulary of correlation: positive, negative,	**Paper 3: Statistics & Mechanics** **2.2:** Understand informal	N/A

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 (1MA0) Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 (1ST0) Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
		correlation and know that it does not indicate causation; draw estimated lines of best fit; make predictions; interpolate and extrapolate apparent trends while knowing the dangers of so doing **Edexcel GCSE (9-1) Mathematics Higher book** 3.3 – Scatter graphs	zero, causation, association, interpolation and extrapolation. **2e.02:** Describe and make comparisons of correlation by inspection: strong or weak. **2e.03:** Know that correlation does not necessarily imply causation **and multiple factors may interact.** **Edexcel GCSE (9-1) Statistics book** 4.1 – Scatter diagrams 4.2 – Correlations 4.3 – Causal relationships	interpretation of correlation. Understand that correlation does not imply causation. **Statistics and Mechanics Year 1/AS book** 4.1 – Correlation	
A7	Apply and interpret explanatory (independent) and response (dependent) variables, interpolate and extrapolate apparent trends while knowing the dangers of doing so	**S6:** use and interpret scatter graphs of bivariate data; recognise correlation and know that it does not indicate causation; draw estimated lines of best fit; make predictions; interpolate and extrapolate apparent trends while knowing the dangers of so doing **Edexcel GCSE (9-1) Mathematics Higher book** 3.4– Line of best fit 3 – Extend (Q9)	**1b.03:** Know and apply the terms explanatory (independent) variables and response (dependent) variables. 4.5 – Interpolation and extrapolation	**Paper 3: Statistics & Mechanics** **2.2:** Interpret scatter diagrams and regression lines for bivariate data, including recognition of scatter diagrams which include distinct sections of the population (calculations involving regression lines are excluded). **Statistics and Mechanics Year 1/AS book** 4.1 – Correlation 4.2 – Linear regression	N/A
A8	Draw estimated lines of best fit and make predictions; use and interpret the product moment correlation coefficient, recognising its limitations	**S6:** use and interpret scatter graphs of bivariate data; recognise correlation and know that it does not indicate causation; draw estimated lines of best fit; make predictions; interpolate and extrapolate apparent trends while knowing the dangers of so doing **Edexcel GCSE (9-1) Mathematics Higher book** 3.4 – Line of best fit	**2e.04:** Determine line of best fit by eye, by drawing through a calculated double mean point ($\bar{x}$, $\bar{y}$) **and by using the equation of the regression line.** **2e.07: Interpret given Pearson's product moment correlation coefficient (PMCC) in the context of the problem.** **Edexcel GCSE (9-1) Statistics book** 4.4 – Line of best fit 4.6 – The equation of a line of best fit 4.9 – Pearson's product moment correlation coefficient	**Paper 3: Statistics & Mechanics** **2.2:** Interpret scatter diagrams and regression lines for bivariate data, including recognition of scatter diagrams which include distinct sections of the population (calculations involving regression lines are excluded). Understand informal interpretation of correlation. Understand that correlation does not imply causation. **Statistics and Mechanics Year 1/AS book** 4.1 – Correlation 4.2 – Linear regression **Statistics and Mechanics Year 2 book** 1.2 – Measuring correlation	N/A
A9	Use, apply and interpret linear regression; calculate the equation of a linear regression line using the method of least squares (candidates may be asked to draw this regression line on a scatter diagram)	N/A	**2e.04:** Determine line of best fit by eye, by drawing through a calculated double mean point ($\bar{x}$, $\bar{y}$) **and by using the equation of the regression line.** **Edexcel GCSE (9-1) Statistics**	**Paper 3: Statistics & Mechanics** **2.2:** Interpret scatter diagrams and regression lines for bivariate data, including recognition of scatter diagrams which include distinct sections of the population (calculations involving regression	N/A

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 (1MA0) Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 (1ST0) Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
			book 4.6 – The equation of a line of best fit	lines are excluded). **Statistics and Mechanics Year 1/AS book** 4.2 – Linear regression	
A10	Use, apply and interpret Spearman's rank; calculate Spearman's rank correlation coefficient and use it as a measure of agreement or for comparisons of the degree of correlation (tied ranks may be tested in the examination papers).	N/A	**2e.05: Apply formula to determine Spearman's rank correlation coefficient.** **2e.06:** Interpret **calculated or** given Spearman's rank correlation coefficient in the context of the problem. **Edexcel GCSE (9-1) Statistics book** 4.8 – Calculating Spearman's rank correlation coefficient	N/A	N/A

Probability

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 (1MA0) Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 (1ST0) Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
P1	Understand and demonstrate that empirical unbiased samples tend towards theoretical probability distributions, as sample size increases	**P3:** relate relative expected frequencies to theoretical probability, using appropriate language and the 0-1 probability scale **P7:** construct theoretical possibility spaces for single and combined experiments with equally likely outcomes and use these to calculate theoretical probabilities **Edexcel GCSE (9-1) Mathematics Higher book** 10.1 – Combined events 10.3 – Experimental probability	**3p.01:** Use collected data to calculate estimates of probabilities. **3p.03:** Use probability values to calculate expected frequency of a specified characteristic within a sample or population. **3p.06:** Recognise that experimental probability will tend towards theoretical probability as the number of trials increases when all variables are random. **Edexcel GCSE (9-1) Statistics book** 6.1 – The meaning of probability 6.2 – Experimental probability	N/A	N/A
P2	Enumerate sets and combinations of sets systematically using tree diagrams	**P6:** enumerate sets and combinations of sets systematically, using tables, grids, Venn diagrams and tree diagrams **Edexcel GCSE (9-1) Mathematics Higher book** 10.4 – Independent events and tree diagrams 10.5 – Conditional probability	**3p.07:** Use two-way tables, sample space diagrams, tree diagrams and Venn diagrams to represent all the different outcomes possible for at most three events. **Edexcel GCSE (9-1) Statistics book** 6.9 – Tree diagrams 6.10 – Conditional probability	**Paper 3: Statistics & Mechanics** **3.2:** Understand and use conditional probability, including the use of tree diagrams **Statistics and Mechanics Year 1/AS book** 5.4 – Tree diagrams **Statistics and Mechanics Year 2 book** 2.2 – Conditional probability 2.4 – Probability formulae	N/A

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 (1MA0) Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 (1ST0) Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
				2.5 – Tree diagrams	
P3	Calculate the probability of independent and dependent combined events, including sampling with and without replacement, using tree diagrams and other representations, Venn diagrams, sum and product laws	**P8:** calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions **P9: calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams** **Edexcel GCSE (9-1) Mathematics Higher book** 10.1 – Combined events 10.2 – Mutually exclusive events 10.4 – Independent events 10.5 – Conditional probability 10.6 – Venn diagrams and set notation	**3p.07:** Use two-way tables, sample space diagrams, tree diagrams and Venn diagrams to represent all the different outcomes possible for at most three events. **Edexcel GCSE (9-1) Statistics book** 6.5 – Venn diagrams 6.6 – Mutually exclusive and exhaustive events 6.7 – The general addition law 6.8 – Independent events 6.9 – Tree diagrams 6.10 – Conditional probability 6.11 – The formula for conditional probability	**Paper 3: Statistics & Mechanics** **3.1:** Understand and use mutually exclusive and independent events when calculating probabilities. **Statistics and Mechanics Year 1/AS book** 5.1 – Calculating probabilities 5.2 – Venn diagrams 5.3 – Mutually exclusive and independent events 5.4 – Tree diagrams **Statistics and Mechanics Year 2 book** 2.2 – Conditional probability 2.3 – Conditional probabilities in Venn diagrams 2.4 – Probability formulae 2.5 – Tree diagrams	N/A
P4	Calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams	**P8:** calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions **P9: calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams** **Edexcel GCSE (9-1) Mathematics Higher book** 10.5 – Conditional probability	**3p.07:** Use two-way tables, sample space diagrams, tree diagrams and Venn diagrams to represent all the different outcomes possible for at most three events. **Edexcel GCSE (9-1) Statistics book** 2.2 Two-way tables 6.5 – Venn diagrams 6.9 – Tree diagrams 6.10 – Conditional probability	**Paper 3: Statistics & Mechanics** **3.2:** Understand and use conditional probability, including the use of tree diagrams, Venn diagrams, two-way tables. **Statistics and Mechanics Year 2 book** 2.2 – Conditional probability 2.3 – Conditional probabilities in Venn diagrams 2.4 – Probability formulae 2.5 – Tree diagrams	N/A
P5	Understand, use and interpret probability notation, its application to Venn diagrams, exclusive and complementary events, independence of two events and conditional probability	**P8:** calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions **Edexcel GCSE (9-1) Mathematics Higher book** 10.1 – Combined events 10.2 – Mutually exclusive events 10.4 – Independent events 10.5 – Conditional probability 10.6 – Venn diagrams and set notation	**3p.07:** Use two-way tables, sample space diagrams, tree diagrams and Venn diagrams to represent all the different outcomes possible for at most three events. **Edexcel GCSE (9-1) Statistics book** 6.5 – Venn diagrams 6.6 – Mutually exclusive and exhaustive events 6.7 – The general addition law 6.8 – Independent events 6.10 – Conditional probability 6.11 – The formula for conditional probability	**Paper 3: Statistics & Mechanics** **3.1:** Understand and use mutually exclusive and independent events when calculating probabilities. **3.2:** Understand and use conditional probability, including the use of tree diagrams, Venn diagrams, two-way tables. **Statistics and Mechanics Year 1/AS book** 5.2 – Venn diagrams 5.3 – Mutually exclusive and independent events **Statistics and Mechanics Year 2**	N/A

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 (1MA0) Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 (1ST0) Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
				book 2.2 – Conditional probability 2.3 – Conditional probabilities in Venn diagrams	
P6	Understand, interpret and use appropriately the following formulae: $P(A') = 1 - P(A)$ $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ $P(A \cap B) = P(A) \times P(B \mid A)$ $P(B \mid A) = P(B)$ and $P(A \mid B) = P(A)$ $P(A \cap B) = P(A) \times P(B)$	N/A	**3p.08:** Know and apply the formal notation for independent events. **3p.09:** Know and apply the formal notation for conditional probability. **Edexcel GCSE (9-1) Statistics book** 6.6 – Mutually exclusive and exhaustive events 6.8 – Independent events 6.10 – Conditional probability 6.11 – The formula for conditional probability	**Paper 3: Statistics & Mechanics** **3.2:** Understand and use the conditional probability formula **Statistics and Mechanics Year 2 book** 2.1 Set notation 2.2 – Conditional probability 2.4 – Probability formulae	N/A
P7	Understand and interpret risk; the probability of something happening multiplied by the resulting cost or benefit if it does; comparison of levels of risk; application of risk to real-life contexts such as finance, insurance and trading.	N/A	**3p.04:** Use collected data and calculated probabilities to determine and interpret relative risks and absolute risks, and express in terms of expected frequencies in groups. **Edexcel GCSE (9-1) Statistics book** 6.3 – Using probability to assess risk	N/A	N/A

Linear programming

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 (1MA0) Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 (1ST0) Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
LP1	Translate simple situations or procedures into algebraic expressions or formulae; derive an equation (or two simultaneous equations), solve the equation(s) and interpret the solution	**A17:** solve linear equations in one unknown algebraically (including those with the unknown on both sides of the equation) **A19:** solve two simultaneous equations in two variables (linear/linear) algebraically **A21:** translate simple situations or procedures into algebraic expressions or formulae; derive an equation (or two simultaneous equations), solve the equation(s) and interpret the solution **Edexcel GCSE (9-1) Mathematics Higher book** 2.3 - Equations 2.4 - Formulae	N/A	**Paper 1 and Paper 2: Pure Mathematics** **2.4:** Solve simultaneous equations in two variables by elimination and by substitution **Pure Mathematics Year 1/AS book** 3.1 – Linear simultaneous equations	N/A

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 (1MA0) Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 (1ST0) Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
		9.4 – Solving simple simultaneous equations 9.5 – More simultaneous equations			
LP2	Plot graphs of equations that correspond to straight line graphs in the coordinate plane; use the form $y=mx+c$ to identify parallel lines; find the equation of the line through two given points, or through one point with a given gradient	**A9:** plot graphs of equations that correspond to straight-line graphs in the coordinate plane; use the form y = mx + c to identify parallel **and perpendicular lines**; find the equation of the line through two given points or through one point with a given gradient **Edexcel GCSE (9-1) Mathematics Higher book** 6.1 – Linear graphs 6.2 – More linear graphs	N/A	**Paper 1 and Paper 2: Pure Mathematics** **2.1:** Understand and use the equation of a straight line, including the forms $y - y_1 = m(x - x_1)$ and $ax + by + c = 0$; Gradient conditions for two straight lines to be parallel or perpendicular. **Pure Mathematics Year 1/AS book** 5.1 – y = mx +c 5.2 – Equations of straight lines 5.3 – Parallel and perpendicular lines 5.5 – Modelling with straight lines	N/A
LP3	Recognise, sketch and interpret graphs of linear functions	**A9:** plot graphs of equations that correspond to straight-line graphs in the coordinate plane; use the form y = mx + c to identify parallel **and perpendicular lines**; **Edexcel GCSE (9-1) Mathematics Higher book** 6.1 – Linear graphs 6.2 – More linear graphs	N/A	**Paper 1 and Paper 2: Pure Mathematics** **2.1:** Understand and use the equation of a straight line, including the forms $y - y_1 = m(x - x_1)$ and $ax + by + c = 0$; Gradient conditions for two straight lines to be parallel or perpendicular. **Pure Mathematics Year 1/AS book** 5.1 – y = mx +c 5.2 – Equations of straight lines	N/A
LP4	Solve algebraically linear equations in one unknown with the unknown on both sides of the equation	**A17:** solve linear equations in one unknown algebraically (including those with the unknown on both sides of the equation) **Edexcel GCSE (9-1) Mathematics Higher book** 2.3 - Equations 2.4 - Formulae	N/A	N/A	N/A
LP5	Solve two simultaneous equations in two variables (linear/linear) algebraically; find approximate solutions using a graph	**A19:** solve two simultaneous equations in two variables (linear/linear) algebraically **Edexcel GCSE (9-1) Mathematics Higher book** 9.4 – Solving simple simultaneous equations 9.5 – More simultaneous equations	N/A	**Paper 1 and Paper 2: Pure Mathematics** **2.4:** Solve simultaneous equations in two variables by elimination and by substitution **Pure Mathematics Year 1/AS book** 3.1 – Linear simultaneous equations 3.3 – Simultaneous equations on	N/A

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 (1MA0) Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 (1ST0) Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
				graphs	
LP6	Solve linear inequalities in one variable, representing the solution on a number line using set notation	**A22:** solve linear inequalities in one **or two** variable**(s), and quadratic inequalities in one variable**; represent the solution set on a number line , **using set notation and on a graph** **Edexcel GCSE (9-1) Mathematics Higher book** 9.7 – Solving linear inequalities	N/A	**Paper 1 and Paper 2: Pure Mathematics** **2.5:** Solve linear inequalities in a single variable. Express solutions through correct use of 'and' and 'or', or through set notation. **Pure Mathematics Year 1/AS book** 3.4 – Linear inequalities	N/A
LP7	Solve linear inequalities in two variables, representing the solution on a graph	**A22:** solve linear inequalities in one **or two** variable**(s), and quadratic inequalities in one variable**; represent the solution set on a number line , **using set notation and on a graph** **Edexcel GCSE (9-1) Mathematics Higher book** 15.2 – Representing inequalities graphically	N/A	**Pure Mathematics Year 1/AS book** 3.6 – Inequalities on graphs	N/A
LP8	Use algebra to support and construct arguments	**A6:** … argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments **and proofs** **Edexcel GCSE (9-1) Mathematics Higher book** 2.2 – Expanding and factorising	N/A	N/A	N/A
LP9	Formulate problems as linear programs with up to three variables	N/A	N/A	N/A	**Paper 3D: Decision Mathematics 1** **5.1:** Formulation of problems as linear programs. **Decision Mathematics 1 book** 7.1 – Formulating linear programming problems 8.1 – Modelling a project
LP10	Solve and interpret two-variable problems graphically, using ruler and vertex methods	N/A	N/A	N/A	**Paper 3D: Decision Mathematics 1** **5.2:** Graphical solution of two variable problems using objective line and vertex methods including cases where integer solutions are required. **Decision Mathematics 1 book** 7.3 – Problems requiring integer solutions
LP11	Consider problems where solutions must have integer values.	N/A	N/A	N/A	**Paper 3D: Decision Mathematics 1** **5.2:** Graphical solution of two

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 (1MA0) Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 (1ST0) Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
					variable problems using objective line and vertex methods including cases where integer solutions are required. **Decision Mathematics 1 book** 7.3 – Problems requiring integer solutions

Sequences and growth

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
SG1	Set up, solve and interpret the answers to growth and decay problems, including compound interest	**R16:** set up, solve and interpret the answers in growth and decay problems, including compound interest **and work with general iterative processes** **Edexcel GCSE (9-1) Mathematics Higher book** 11.1 – Growth and decay	N/A	**Paper 1 and Paper 2: Pure Mathematics** **6.7:** Understand and use exponential growth and decay; use in modelling (examples may include the use of e in continuous compound interest, radioactive decay, drug concentration decay, exponential growth as a model for population growth); consideration of limitations and refinements of exponential models. **Pure Mathematics Year 1/AS book** 14.3 – Exponential modelling	N/A
SG2	Calculate simple interest and compound interest; use and interpret graphical representation of simple and compound interest	**R9:** work with percentages greater than 100%; solve problems involving percentage change, including percentage increase/decrease and original value problems, and simple interest including in financial mathematics **R16:** set up, solve and interpret the answers in growth and decay problems, including compound interest **Edexcel GCSE (9-1) Mathematics Higher book** 4.4 - Percentages 4.5 – Fractions, decimals and percentages 11.1 – Growth and decay	N/A	N/A	N/A
SG3	Recognise, sketch and interpret graphs of quadratic functions, reciprocal functions, polynomial functions of the form $y=x^n$ and exponential functions $y=k^x$ for positive values of k	**A12:** recognise, sketch and interpret graphs of linear functions, quadratic functions, simple cubic functions, the reciprocal function y = 1/x with x not equal to 0, **exponential functions $y = k^x$ for positive values of k** **Edexcel GCSE (9-1) Mathematics Higher book** 6.6 – Quadratic graphs 6.7 – Cubic and reciprocal graphs 15.3 – Graphs of quadratic functions 15.4 – Solving quadratic equations graphically 15.5 – Graphs of cubic functions 19.3 – Inverse proportion	N/A	**Paper 1 and Paper 2: Pure Mathematics** **2.7:** Understand and use graphs of functions; sketch curves defined by simple equations including polynomials. **Pure Mathematics Year 1/AS book** 4.1 – Cubic graphs 4.2 – Quartic graphs 4.3 – Reciprocal graphs	N/A

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
		19.4 – Exponential functions			
SG4	Interpret the gradient at a point on a curve as the instantaneous rate of change and apply the concepts of average and instantaneous rates of change (gradients of chords and tangents) in numerical and graphical contexts	**R15: interpret the gradient at a point on a curve as the instantaneous rate of change; apply the concepts of average and instantaneous rate of change (gradients of chords and tangents) in numerical, algebraic and graphical contexts** **Edexcel GCSE (9-1) Mathematics Higher book** 19.5 – Non-linear graphs	N/A	N/A	N/A
SG5	Calculate with roots, and with integer and fractional indices	**N7:** calculate with roots, and with integer and **fractional** indices (Prior knowledge) N9 calculate with and interpret standard form A x 10^n, where $1 \leq A < 10$ and n is an integer. **Edexcel GCSE (9-1) Mathematics Higher book** 1.4 – Calculating with powers (indices) 1.5 – Zero, negative and fractional indices 1.6 – Powers of 10 and standard form	N/A	**Paper 1 and Paper 2: Pure Mathematics** **2.1:** Understand and use the laws of indices for all rational exponents. **Pure Mathematics Year 1/AS book** 1.1 – Index laws 1.4 – Negative and fractional indices	N/A
SG6	Recognise and interpret linear and quadratic sequences; deduce expressions to calculate the *n*th term of linear and quadratic sequences	**A24:** recognise and use sequences of ... simple arithmetic progressions, quadratic sequences, and simple geometric progressions (r^n where n is an integer, and r is a rational number > 0) A25: deduce expressions to calculate the nth term of linear sequences **and quadratic** sequences. **Edexcel GCSE (9-1) Mathematics Higher book** 2.5 – Linear sequences 2.6 – Non-linear sequences	N/A	**Paper 1 and Paper 2: Pure Mathematics** **4.2:** Work with sequences including those given by a formula for the n th term and those generated by a simple relation of the form $x_{n+1} = f(x_n)$. **Pure Mathematics Year 2 book** 3.7 – Recurrence relations	N/A
SG7	Recognise, use and interpret sequences, including those given by a formula for the nth term, those generated by a simple relation of the form $x_{n+1}=f(x_n)$, Fibonacci sequences and the golden ratio	**A23:** generate terms of a sequence from either a term-to-term or a position-to-term rule **A24:** Fibonacci type sequences **Edexcel GCSE (9-1) Mathematics Higher book** 2.5 – Linear sequences 2.6 – Non-linear sequences	N/A	**Paper 1 and Paper 2: Pure Mathematics** **4.2:** Work with sequences including those given by a formula for the *n*th term and those generated by a simple relation of the form $x_{n+1} = f(x_n)$. **Pure Mathematics Year 2 book** 3.7 – Recurrence relations	N/A

Ref	Mathematics in Context content descriptor	GCSE (9-1) Mathematics 2015 Edexcel GCSE (9-1) Mathematics Higher	GCSE (9-1) Statistics 2017 Edexcel GCSE (9-1) Statistics	GCE A Level Mathematics (9MA0) Edexcel AS and A Level Mathematics	GCE A Level Further Mathematics (9FM0) Edexcel AS and A Level Further Mathematics
SG8	Understand and use sigma notation	N/A	N/A	**Paper 1 and Paper 2: Pure Mathematics** **4.3:** Understand and use sigma notation for sums of series. **Pure Mathematics Year 2 book** 3.6 - Sigma notation	N/A
SG9	Recognise, use and interpret arithmetic series, including the general term of an arithmetic series and the sum to *n* terms of an arithmetic series	**A24:** recognise and use sequences of ... simple arithmetic progressions **Edexcel GCSE (9-1) Mathematics Higher book** 2.5 – Linear sequences	N/A	**Paper 1 and Paper 2: Pure Mathematics** **4.4:** Understand and work with arithmetic sequences and series, including the formulae for nth term and the sum to n terms. **Pure Mathematics Year 2 book** 3.1 – Arithmetic sequences 3.2 – Arithmetic series	N/A
SG10	Recognise, use and interpret geometric series, including the general term of a geometric series, the sum to *n* terms of a geometric series and the sum to infinity of a convergent geometric series including the use of $\|r\| < 1$.	**A24:** ..., and simple geometric progressions (r^n where n is an integer, and r is a rational number > 0) **Edexcel GCSE (9-1) Mathematics Higher book** 2.6 – Non-linear sequences	N/A	**Paper 1 and Paper 2: Pure Mathematics** **4.5:** Understand and work with geometric sequences and series including the formulae for the nth term and the sum of a finite geometric series; the sum to infinity of a convergent geometric series, including the use of |r|<1; modulus notation. **Pure Mathematics Year 2 book** 3.3 – Geometric sequences 3.4 – Geometric series 3.5 – Sum to infinity	N/A